Abstract

A gas diffusion structure for polymer electrolyte fuel cells having a sheet-like carbon substrate made hydrophobic and having two main opposing surfaces and a contact layer on one of these surfaces. The contact layer is formed of an intimate mixture of at least one hydrophobic polymer, which can be polyethylene, polypropylene or polytetrafluoroethylene, and finely divided carbon particles, wherein the weight percentage of the carbon particles relative to the total weight of the contact layer amounts to 40 to 90 wt.%. The gas diffusion structure is a carbon substrate made hydrophobic by at least one hydrophobic polymer and the hydrophobic polymers are restricted to two layers extending from both opposing surfaces into the carbon substrate down to a depth of from 5 to 40 μm and the hydrophobic polymers fill of from 20 to 60 % of the pore volume within those layers.